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ABSTRACT

In times when the total volume of information is proliferating and information users are demanding greater access and faster response, the librarian is likely to turn to the computer for assistance. Modern computers can provide fast, accurate operations with an enormous capacity for bibliographic data, and they can be accessed through on-line, time-sharing terminals. Using binary logic to code bibliographic data, new computer languages can facilitate swift manipulation of data and rapid retrieval. Cataloging and indexing can also be automated. In the future computers will be able to provide continuous monitoring of all bibliographic data provided that library technicians and library users can be kept informed of the continuing advances in technology. (EMH)

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Joseph Z. Nitecki

LIBRARY TECHNICAL SERVICES IN THE AGE OF COMPUTERS

A brief overview of library literature discussing the conceptual impact of automation on library operations.

INTRODUCTION

"In modern thought (if not in fact)
nothing is that doesn't act,
so that is reckoned wisdom which
describes the scratch
but not the itch."(1)

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It is a common characteristic of a library pragmatist to talk about the consequences without considering too seriously the reasons for them; to concentrate his attention on the procedures satisfying immediate needs, while postponing the more procrastinated study of long range policies, which attempt to define the rational for an action itself.

We like to talk about the scratch -- not trying to identify what itches us. To some extent, the same attitude prevails in our reading of information theory, an attitude which already reflects the impact of technology on our way of thinking. In analyzing communication processes, we tend to shift our attention from the meaning originally intended in the message, to the message's effect on us. "The meaning of the message," Kenneth Boulding maintains, "is the change which it produces in the image."(2)

We encounter a similar effect in discussing the impact of computers on libraries. The emphasis in the reviewed literature is predominantly on the automated processing of

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information, rather than on the information itself.[3] It's the orientation of an engineer, designing the electrical channels of communication, rather than the approach of the traditional librarian, concerned with the dissemination of ideas, concepts and beliefs contained in his collection.

I do not intend to dwell on this theme in the present paper, but will attempt to correlate the "scratching with the itch" of computers to the extent that this presentation will allow.

It is difficult to discuss meaningfully the influences of computers on librarianship without first grasping their basic structure. And although the concept of computerization is itself reasonably simple, the discussion about it is not easy for at least two reasons: (1) the simplicity of the computer is hidden in the complexities of its hardware, further camouflaged by the jargon of an expert, and (2) librarians' familiarity with computers varies considerably.

The background experiences of any average audience of librarians today ranges from those born in the age of the abacus, through the generation of slide-rule-users, to those who were already born into the world of pocket calculators. What in automation may be kidstuff to some, is still a revelation to others; and while some of us ponder about the computerized future, others couldn't care less. I only hope that this presentation will not insult the reader's intelligence for its elaborate account of the obvious, nor that it will confuse him by a belaboring of trivia.

BASIC CONCEPTS

The library is viewed in this paper as a system of an interactive memory of a society, not only responding to the individual user's needs, but also creating new needs for that user.

Technical services are considered here as means used in accomplishing some of these responsibilities, by developing and implementing procedures for acquiring, processing,

and retrieving library materials. The services are not, however, restricted to the traditional activities of a technical services division of a library, but they extend to all computerized processes in the system. It is the technical level of such operations and services that will significantly affect the scope and effectiveness of the whole library in the near future.

The computer is discussed in this paper as a sophisticated data processing tool, which -- because of its potentials -- can considerably expand the technical services of a university library. More formally, the computer is defined as "any device capable of solving problems, by accepting information, applying prescribed operations to the information, and supplying the results of the process."(4)

The organization of human knowledge is limited by the capacity of human memory. It is this biological and cultural limitation that leads to the development of recorded knowledge, from mnemonic, oral devices, through the introduction of an alphabet, the invention of printing presses, up to the current use of computers. It also has created the concept of a subject specialist, each of whom knowing progressively more about decreasingly smaller segments of knowledge, sharing that knowledge through the informal, specialized, often personal channels of communication which are difficult to tap by the library.

A fascinating theory on the limits of human capacity for processing information was proposed by George A. Miller. In his article entitled "The Magic Number Seven, Plus or Minus Two," Miller maintains that "the span of absolute judgment and the span of immediate memory impose severe limitations on the amount of information that we are able to receive, process, and remember."(5) This range is limited on the average to seven plus or minus two items that one can simultaneously recall from his memory. Harmon uses the same figure as a yardstick to explain the formation of systems of knowledge in the past and to predict the emergence of the world encyclopedic supersystem by the year 2000.(6)

The memory limitation refers to the units of information, the symbols expressing

the information, but not to information content. Shannon, in his well-known mathematical theory of information, defined exactly the amount of information that a vehicle will carry, as a logarithm to the base 2, of the number of possible choices.(7) Thus, in a binary system of two possible choices, $\log_2 2=1$ bit of information, a letter of an alphabet will need $\log_2 26=4.7$ bits of information (assuming 26 letters in an alphabet), while a word in a sentence will have to use $\log_2 1000=10$ bits. (This will, of course, depend on the size of the dictionary, here we use the 1000 word Basic English.) Every increase of alternatives by a factor of 2, requires one additional bit of information.

Thus, the BInary digiT, called "bit," becomes a unit of information, containing the amount of data needed to decide among the two equally likely alternatives. MacKay illustrates the concept in the following fashion: "Let us suppose that we have two jars of jam on the shelf, numbered one and two, and in one of them the jam has gone bad; we don't know which, but a friend does." So we ask whether it is jar number one? The single answer, whether 'yes' or 'no,' is all we need to know to pick up a bad jam, and that answer equals one bit of information. "It has enabled us to select one out of two possibilities." If we have eight jars with one containing bad jam, we first divide the eight into two groups of four jars each, and ask whether the bad jar is in the first four or the second; narrowing the search into two sections of four jars each, and repeating the same procedure until we have two choices. Thus, "our method of calculating the number of bits of information, by counting the number of successive subdivisions required to identify a given choice, amount to taking the logarithm of the total number of equally likely possibilities...the number of steps is just the logarithm of the number of possibilities to the base 2."(8)

To overcome the limitations of human memory and of the restricted capacities of communication channels, we classify knowledge into various schema. "According to the most advanced theories of cognition" -- Licklider maintains -- "men think by manipulating,

modifying, and combining 'schemata.' A new concept is achieved...by adapting an old schema or, if necessary, arranging several refurbished schemata into a new, complex structure."[9] This is the state in which the computer can provide extremely useful assistance in building an extended network of relations through the analyses of existing knowledge, by storing a large amount of information, and by fast and reliable processing of such information. In this sense, the computer can be looked at as an extension of human memory.

PRESSURES FOR CHANGE

The demands for changing the types of library services, according to Becker and Pulsifer, are the reflections of the changing profile of the library patron, his interest in the use of library materials, and the appearance of new 'reading' formats.

Today, our population is still growing, it is better educated and has more leisure time than ever before. Individuals are seeking more information, both specialized for their jobs, and generalized in their civic and recreational activities. The society is restless, demanding fast service. The publishing industry has responded to these demands by publishing more material in a variety of book and nonbook formats. The ever-multiplying number of periodicals complicate the process of controlling their holdings, the microforms and other nonprint media challenge the traditional cataloging approaches, while the files of library records are overflowing available floor space. The user demands better, more up-to-date and more relevant services. He challenges the traditional subject nomenclature, expects more efficient and precise retrieval systems, expecting at the same time to find everything he needs, instantaneously.[10]

In responding to these pressures, the library staff kept growing in size and in specialization, the library catalogs became more complicated, and the whole library organization has lost its traditional personalized service to the library patrons in this expansion.

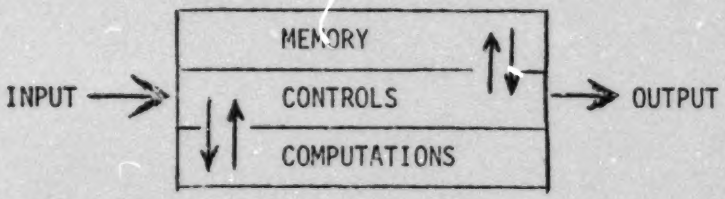
All these emerging pressures become evident in a competition within the library for the priorities among a number of well established goals. The concept of the library cultural function-to preserve little used material for future scholars-competes with the promotional emphases on the use of currently needed material. The economics of scale, based on a notion of centralized mass processing of materials, clashes with the complexities of scale principle, reminding us of the pitfalls of a large, dehumanized complex system. Furthermore, the library, in its mission to provide a multi-access to the collection, becomes a slave of its own invention, the multiplicative catalog. As someone noted, it might be more difficult today to replace a card in the library catalog, than to replace a missing book in the stacks. And, finally, the wings of the optimistic, change-oriented librarians are clipped by the forced realization that the library cannot be readjusted to new conditions overnight, and that any change involves not only time and money, but also plenty of political and moral persuasion.(11)

COMPUTER CONFIGURATION

The term "computer," some 35 years after its introduction, has become a misnomer. Indeed, in its initial stage, called 'first generation computers,' the computer consisted of numerous vacuum tubes performing advanced algebraic calculations. The invention of transistors in the second generation computers provided more electrical circuitry in a smaller area, thus allowing for a larger memory (or storage) of information. In that period, the computer resembled an automated file, with a huge amount of data stored on magnetic tapes. The introduction of printed circuits in the third generation computers made it an even faster machine, while the added voltmeter, consisting of a pair of electrodes recording voltage and displaying the recorded messages on a cathode tube, created an illusion of a computer as a man-like entity. The computer can now sense the stimula by recording the changing voltage, input it into his own memory, and process the information by performing arithmetic and logical operations, all without any human intervention.

In describing a computer system, one usually distinguishes between the computer hardware, the machine, and its software, the machine's modus operandi.

Schematically, computer hardware consists of a series of electric circuits serving as memory (storage of data), control units (receiving the commands), a computation unit (arithmetical and logical processor), and various input/output devices.



Library operations require a type of computer hardware that would provide easy access to any part of the data storage, allowing for an efficient maintenance and update of the file, with the capabilities for its memory expansion, and with a provision for data reproduction.

The computer hardware is of particular value to libraries in offering the following facilities:

(a) large files of bibliographic data, accommodating many millions of bits of information. These files incorporate the information traditionally provided by public catalogs (describing the titles in the collection), in the shelflist (serving as a classified inventory of the holdings), in the indexes (used as basic tools in information retrieval)by compiling the abstracts of documents and, in some instances by retrieving the documents themselves;

(b) high speed operations, which prevent the obsolescence of data, and indirectly speed the thinking processes of the user, who can now verify his hypothesis and make any necessary adjustment in his search while still at the terminal;

(c) accuracy and reliability of computer operations which can free the human operator from the drudgery of repetitive, fatiguing, and error-prone tasks;

(d) on-line service makes a dialogue between a user and machine a reality. The user may ask for information, or he may ask about the procedures to formulate such questions, and he can use the computer for, what Hamming calls the "information regeneration, rather than information retrieval."[12] This is an important extension of the computer's service, provided by programing a method of interpreting the data by the computer, rather than by inputting the actual interpretation. For instance, instead of storing mathematical tables in the computer, one can program the construction of such tables from the available data on request. Related to the above, is the opportunity for simulating the experimental conditions prior to implementing the experiment itself. The concept of simulation may one day become a major service offered by the library;[13]

(e) time sharing facilities which make multiaccess to the computer possible, thus allowing for a simultaneous use of the system by different users, each, if so desired, processing different programs. This, in turn, introduces the concept of networks, in which the costs of operations are shared among the participants, thus making the computer services accessible to the libraries with smaller budgets.

The "software" of the computer is a generic term, covering the concept of the algorithm, defined as "a detailed and exhaustive procedure for doing a job or solving a problem"[14] and its format, the programing language.

The programing language consists of programing instructions and language notations. The instructions provide the location of data in storage, and detailed procedures for their processing. The instruction can be formulated either in a symbolic, machine dependant language, or in a high-level, machine independent language, such as FORTRAN or COBOL,each developed for a specific field of knowledge: FORTRAN (Formula Translation) for engineers, mathematicians, and scientists in general, COBOL (Common Business Oriented Language) for businessmen.

The capability of coding the information into magnetic storage devices created new types of carriers of information, such as tape, disc, or magnetic core, requiring different processing, and radically different types of library services. The coding of bibliographic data, by tagging various facets of it, facilitates recall by many facets of information contained in that data either explicitely or implicitely. An example of explicit information in traditional library system is a call number on the catalog card, implicit information is provided by the actual arrangement of cards in a catalog, e.g., by subject. The concept of a magnetic carrier of information, in effect, made the information free from the page on which it was printed. This is an important innovation. As Licklider pointed out, "the books are bulky and heavy. They contain much more information than the reader can apprehend at any given moment, and the excess often hides the part he wants to see."(15) The computer, he argues, changes the nature of the datum from its passive, physical presence somewhere in the book, to a dynamic part of a computer built-in processing facility. The computer can analyze the document for the user, correlate and retrieve any part of it, as needed, without retrieving the actual, physical volume.

Coding for mechanical manipulations is based on the binary system already referred to in this paper. This system of a two-digit notation fits perfectly the requirements of the electronic methods of recording data. The "0-1" units of the system are translated into the "on-off" switch positions of a magnetic recorder, thus becoming alpha-numerical codes for bibliographic information.

The binary system encompasses all that a computer actually does. Its operations consist of processing long series of magnetic signals, recorded by the flip-flop circuits of the machine. The impact of this simple device is fundamental to the understanding of the computer, since it makes possible a manipulation of information as a code, irrespectively of its specific meaning or significance. The manipulative process involves arithmetic computations, basically addition and subtraction in a binary mode, and logical

matching processes based on Boolean logic.

This search strategy is very fast and reliable in a retrieval system with a fixed size file. Its limitation is created by the system's own rigidity in not allowing for an under-or over-match of data,and thus by requiring very precise instruction formulations.[16] For this reason, Salton suggests a possibility of replacing "the Boolean search logic by a type of vector matching in which the user would specify as acceptable any document exhibiting at least X terms out of Y specified ones."[17]

The overall importance of computer technology is in its additive characteristics. Human efficiency cannot be mechanically manipulated by replacing, for example, ten hours of one man's work by ten men, each working one hour. Such a change would create new logistic problems, such as communication and supervision.[18] But such replacement can be achieved by the computer.

LIBRARY APPLICATIONS

The basic assumption underlying computerized information processes is the "conviction that people can handle the major part of their interaction with the fund of knowledge better by controlling and monitoring the processing of information than by handling all the detail directly themselves."[19] Meadow describes the man-computer interaction as an example of symbiosis, that is, the working together of two dissimilar organisms, depending on each other in achieving common goals. The computer's contribution is in providing large storage, fast retrieval, and rapid calculations, while man's input to the system is intellectual and original, creating and identifying patterns and decision-making processes.[20] Important also is a distinction between tasks that can be done by machine and the tasks that must be done by man. The questions frequently asked are handled by machine, since they can be anticipated and programmed; the so-called 'low probability events' i.e., seldom asked questions, are handled by human operators.[21]

The overall impact of computers on libraries was classified by Hayes into five basic implications: (1) operational: in methods of analyses, mechanization and costs controls; (2) systems: in centralized processing and allocation of resources; (3) professional: in the degree of awareness of the changes; (4) educational: evident in changing curricula; and (5) theoretical: in the definition of the concept of information, its interpretation in information science and in the use of computers in library research.(22)

In a sense, the computer's significance can be viewed as the latest in a series of revolutions, which changed the communication patterns in our culture.(23)

The human communication process started with the development of oral language, which allowed for an exchange of knowledge among the members of an immediate group. This verbal communication lacked means for storing the acquired knowledge for future use. The system was greatly improved with the invention of written language, which provided means for recording knowledge and for storing its carriers, manuscripts, in the emerging libraries. These collections were small, expensive, and severely limited in their use. The Guttenberg revolution changed all that by providing for printing inexpensive, multiple copies of manuscripts, easily available to any user of free public libraries. The present electronic stage of communication speeded up and personalized the access to information through on-line access to computerized information and by offering various reprographic, inexpensive formats such as microforms and video images.

The most visible theoretical influence of computers on librarianship is provided by fast expanding interest in the science of information. This discipline sharply differentiated between the quantitative, mathematical concept of information in information science, and the qualitative concept of knowledge in librarianship.

Information science studies the properties of the message, the methods of its transmittal, the relationship between the message and its receipient, whether it is

in a human, artificial, or biological system of communication. Information science stresses a synchronic approach of logical models and analyses in the study of the message and its relevance, while library science is based on a diachronic approach, stressing conceptual changes in the meaning of the message.

An illustration of the nature of these differences is provided by a subdiscipline of the documentalist in information science. The approaches of the documentalist and librarian differ in the product of their services. The documentalist provides information, while the librarian locates the documents containing that information. The documentalist is usually a highly specialized member of a research or commercial team, and is responsible almost exclusively for the monitoring of current developments in his field, while the librarian, as a generalist, is concerned with all fields of knowledge, serving a more heterogenous public. The documentalist is primarily interested in indexing, in the compilation of thesauri and in the multi-faceted classification systems; the librarian's main concerns are still in the collection and preservation of documents, its bibliographic control through linear classification, standard catalog descriptions, networks, union lists of holdings and in development of interlibrary co-operation.(24)

EXAMPLES OF COMPUTER APPLICATIONS

a. MARC System. This -- as someone observed -- most frequently used by librarians Anglo-Saxon four letter word, stands for Machine Readable Catalog. It is a computer program, developed in the 1960's by the Library of Congress, exclusively for the purpose of transcribing all bibliographic records into a standard machine readable format, compatible with any computer configuration.

The data provided by MARC consists of six basic parts: record length, communication field, record control field, fixed field, record directory, and variable data fields. The format provides for a very detailed recording of all relevant bibliographic

information contained in a given document. MARC tapes are compiled, produced, and distributed by the Library of Congress to its subscribers throughout the world.

The impact of MARC on the automation of library operations is tremendous. It provides a standardization of input and output formats, thus allowing for international exchange of data; it promotes shared cataloging and other technical processes, allowing for fast, unrestricted exchange of data among any information centers or individual libraries. Among the typical usages of MARC are the traditional technical operations of acquisition, cataloging, and physical processing of library material, from the search for an entry, through ordering, claiming, cataloging, to the production and arrangement of cataloging cards, production of spine lables, transaction cards and book catalogs. Once universally accepted, MARC will serve as a base for all information data bases that will be used in a variety of research and reference retrievals.

b. Card Catalog. "Card catalog" was once defined as a place in which bibliographic records get lost alphabetically.[25] It is also a place for possible confusion and frustration of an untold number of uninitiated library users.

The format of the present card catalog is fast outliving its usefulness because of a number of built-in limitations, such as: (1) limited bibliographic access. An average entry in a catalog has only five to eight added entries; (2) expansion of the physical size of the catalog creates a serious financial burden. At the present rate, library catalogs duplicate themselves approximately every 16 years. In 1940, Fremon Rider[26] predicted, for example, that in a 100 years' span, the Yale library card catalog, if not restrained, will have 750,000 drawers, occupying eight acres of floor space, and requiring 6,000 employees, just to process the annual input of materials and records; (3) constant updates of bibliographic records. Library of Congress estimates that in the last 30 years, some 40 percent of all older entries in their catalogs have been changed at least once.[27]

Most of the above problems can be eased by the computer: (1) the bibliographic access can be multiplied at will, with, relatively speaking, a very small increase in the work and costs involved; (2) the book catalogs,compiled and printed by the computer, or reproduced as computer output microforms (COM), together with a direct on-line access to computer-stored data, can drastically reduce the space problem of card catalogs;(3) the maintenance and updates of records are much easier in computerized files than in manual ones.

c. Information Retrieval. Traditional,manual library research is losing out to a much more attractive automated retrieval system. The reasons are obvious. The concept of hierarchical relationships between fields of knowledge,pre-determined at the time of developing the classification system itself, the static, bibliographic description, and the linear arrangement of books by class numbers on the shelves, are all nineteenth century approaches, incompatible with the opportunities offered by computers. The success of finding a desired book in the present system depends to a great extent on the user's or the reference librarian's personal knowledge of the subject, and their ability to translate the needs of the user to the language of a classifier. It is also directly related to the consistency of classification among the catalogers. A book on a similar subject, classified in another field, may be lost forever.

The term "information retrieval" was introduced in the 1950's to denote a method of searching information by co-ordinate indexing, based on keywords assigned to documents, rather than by standard classification, author-title or series entry. The computer, with its facilities to search large files quickly, to match bibliographic entries by fields, to sort data into search categories requested by the user, is well equipped for the retrieval of documents and data. Two types of retrieval are presently in use: a retrospective search for documents or data in response to the user's request, and a current awareness retrieval program, designed to bring to the user's attention, on a regular basis, new publications or data, as per his profile of interest.

Most information retrieval systems now available are offered and maintained commercially and for a fee by organizations such as, e.g., Lockheed Missles and Space Company, which provides citation indexes to scientific and technical literature. This particular program includes the indexes to the following subjects: -NTIS: National Technical Information Service;-INSPEC: Institution of Electrical Engineering;-CHEMCON: Chemical Abstracts;-COMPENDEX: Engineering Index; as well as educational, psychological, social, agricultural, and business data bases;-ERIC: Education Research Information Center publications, Abstracts of Industrial and Research Materials, Psychological Abstracts, Social Science Citation Index.(28)

d. Indexing Systems. Many retrieval systems would not be possible without modern indexing systems. The new indexing approach substitutes for traditional classification of material by identifying in documents, keywords or terms most frequently used as the classificatory descriptors. It is a user-oriented approach, since the keywords are formulated in terms of the individual user's specific needs, identified at the time of the search. It is also a more objective approach than the old classification system, since the indexing utilizes statistical and linguistic analyses of the content of each document, and its citation pattern. It is, however, also a more time and money consuming system, requiring much more detailed analyses of each document; it is also a more demanding approach on the user, who has to do the work of formulating the query himself.(29)

It is feasible, although not quite certain yet, that this indexing approach may replace, in some distant future, the classification systems of today, modifying significantly the present open stack, browsing, and shelf arrangements.

However, a word of caution is needed against an exclusive reliance on the indexing approach. As Henley pointed out, "quantative techniques cannot provide the in-

dexer with a sufficiently accurate document description...for retrieval purposes," because "it just does not seem to be true that facts and knowledge in general are o ganizable into a neat hierarchy."(30)

FUTURE

.ny speculation on the future of computers is risky, except perhaps, in predicting their wide-spread application in every day activities. Among the anticipated technological innovations, we can expect a breakthrough in inputting devices, replacing the present slow keypunching methods, while the use of MARC format in the photo-offset printing technology will speed up the conversion of all information into a machine readable format.

The 100 years old classification and cataloging approaches are already in a process of substantial changes as illustrated by the OCLC. The computer will provide a continuous monitoring of all bibliographic data, correlated with information concerning the circulation and shelving status for any item in the library at any time. Computers will offer significant assistance to the catalogers, by providing them with the detailed analyses of the text, its bibliographic history and subject relevance. They will also make catalogers rare, highly specialized, and much in demand, information classifiers.

Computers will also free individual workers in the library from mechanical tasks, and by monitoring their input, will ease the supervision, doing away with a number of irritating, work related restrictions.

The technical work will most probably be centralized in a uniform, library-wide system, with decentralized access to the computer terminals. This will most probably change the present pattern of dividing the work among the public and technical services divisions.

The need for change in library education is self-evident. The installation of OCLC terminals in the Drexel's Graduate Library School is a good example of the changing emphases in the library curricula.

Any changes will, however, have their own price tags. The problems and issues that will have to be resolved in the future will include, among others: a need to overcome the user's bias to the traditional ways of finding information; development of an "information literacy," defined by Zurkowski as the "ability to find out what is known or knowable;"(31) international standardization of subject headings, eliminating national and cultural biases and political diversities; resolution of a contemporary debate between the publishing industry and librarians concerning the free versus fee systems of information services;(32) overcoming the linguistic difficulties in translations and transliterations of different languages; input of retrospective collections into MARC format; and development of a co-operative system among libraries, which would extend beyond the present concept of a network, as an arrangement supported primarily for local, self-interest.

Soon, the library and information researchers will have to concentrate their attention on the basic issues in evaluation and interpretation of the concept of information; the lawyers will have to resolve various legal problems in the use and misuse of information, such as the problems of copyright and royalties; while the library theoreticians will have to reflect on the phenomenon of "gradual reorganization of man's conception of himself and his relations to the rest of the universe. A philosophy for the future man-machine combination is yet to be created but it is time to start searching for it."(33)

In conclusion, the library literature clearly indicates that the society of the future will be more information-oriented, assigning to the library a responsibility for the provision of any information, at any time, promptly, inexpensively,

and accurately to anyone who asks for it. The new library technology will expand from the traditional role of locating or placing a book in a system, to the additional function of analyzing and evaluating data, by matching the user's needs with the available resources. "The great question of these times is" -- to quote from The Greening of America -- "how to live in and with a technological society; what mind and what way of life can preserve man's humanity and his very existence against the domination of the forces he has created."(34)

The last word on this issue is, however, given to a poet: "The essential problem of man in a computerized age remains the same as it has always been. That problem is not solely how to be more productive, more comfortable, more content, but how to be more sensitive, more sensible, more proportionate, more alive...the biggest single need in computer technology" -- Cousins maintains -- "is not for improved circuitry or enlarged capacity or prolonged memory or miniaturized containers, but for better questions and better use of the answers."(35)

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